

TRAIL & Landscape

A PUBLICATION CONCERNED WITH
NATURAL HISTORY AND CONSERVATION



TRAIL & LANDSCAPE

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THE OTTAWA FIELD-NATURALISTS' CLUB

- Founded 1879 -

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Objects of the Club: To foster an acquaintance with
and love of nature and to encourage and publish
original research in natural history.

Club Publications: THE CANADIAN FIELD-NATURALIST,
official journal of the Club, devoted to the
publishing of research in natural history.
TRAIL & LANDSCAPE, a non-technical publication
of general interest to local naturalists.

Field Trips, Lectures and other natural history
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THINK of it THIS way....

A CONSERVATION CREED

I believe something goes wrong with man when he cuts himself off from the natural world. I think he knows it, and this is why he keeps gardens and window-boxes and house plants, and dogs and cats and budgerigars. Man does not live by bread alone. I believe he should take just as great pains to look after the natural treasures which inspire him as he does to preserve his man-made treasures in art galleries and museums. This is a responsibility we have to future generations, just as we are responsible for the safeguarding of Westminster Abbey or the Mona Lisa.

It has been argued that if the human population of the world continues to increase at its present rate, there will soon be no room for either wildlife or wild places, so why waste time, effort and money trying to conserve them now? But I believe that sooner or later man will learn to limit his own over-population. Then he will become much more widely concerned with optimum rather than maximum, quality rather than quantity, and will rediscover the need within himself for contact with wilderness and wild nature.

No one can tell when this will happen. I am concerned that when it does, breeding stocks of wild animals and plants should still exist, preserved perhaps mainly in nature reserves and national parks, even in zoos and botanical gardens, from which to repopulate the natural environment man will then wish to recreate and rehabilitate.

These are my reasons for believing passionately in the conservation of nature.



by Commander PETER SCOTT

Vice President and Chairman,
World Wildlife Fund
London, England

All this calls for action of three kinds: more research in ecology, the setting aside of more land as effectively inviolate strongholds, and above all, education. By calling attention to the plight of the world's wildlife, and by encouraging people to enrich their lives by the enjoyment of nature, it may be possible to accelerate both the change in outlook and the necessary action.

It has been estimated that conservation all over the world needs each year 2 million pounds (\$5,580,000). This is no astronomical figure. It is half the price of a V bomber, less than one twelfth the price of the new Cunarder, or the price of, say, three or four world-famous paintings.

Much money is needed for relieving human suffering, but some is also needed for human fulfilment and inspiration. Conservation, like education and art, claims some portion of the money we give to help others, including the as yet unborn.

Even if I am wrong about the long-term prospects -- if man were to fail to solve his own over-population problem, and reaches the stage 530 years hence when there will be standing room only on this earth -- even then the conservation effort will have been worth while. It will have retained at least for a time, some of the natural wonders. Measured in man-hours of enjoyment and inspiration this alone would be worth the effort. Many will have enjoyed the pictures even if the gallery is burnt down in the end.



FLOWERS AS INSECTS SEE THEM

Ted Mosquin

Flowers are found in a pleasantly surprising array of colours, sizes, structures and arrangements. Likewise, flower-visiting insects are enormously variable in appearance and behaviour. These include many different species of bees, wasps, butterflies, moths, an enormous variety of flies and even bugs and beetles. If one examines the flower of a cow-parsnip on a warm sunny day in July, for example, the many insects found there may range in size from a bumble bee to flies as small as a pinhead. The insects that visit flowers are, of course, seeking nectar or pollen although some may be there to parasitize other insects. When one considers the incredible diversity of flowers one wonders exactly why insects prefer some to others and what they "see" as they approach a flower.

Biologists now know that both flowering plants and pollinating insects originated more or less in the same period in the history of the world about 100,000,000 years ago. Flowers and insects have, therefore, been evolving together for a very long period of time so that the lives of insects and flowers are interwoven in numerous intriguingly complex ways. It is safe to say that were it not for insects we would not enjoy beautiful flowers today and were it not for flowers our insect fauna would be much poorer and less interesting than it is today. Let us examine a few of the known facts about insect senses and behaviour for these will give us clues as to why flowers behave and look as they do.

One of these facts is that insects are not colour blind, but rather have differing abilities to perceive various flower colours depending on the insect. We now know that an insect may not always be in the mood to pay much attention to colours even though it may perfectly well be able to distinguish between them.

Insects (particularly bees) can see four main colours. These are ultraviolet, bee's blue, bee's green and bee's yellow. See Figure 1. Man cannot see ultraviolet but insects are particularly sensitive to it. Colours which appear to us to be violet or indigo appear to most insects as bee's blue. Colours which are blue to us are seen as bee's green to insects, and colours which appear green, yellow or orange to us are bee's yellow to insects. Most insects react to red as to a tone of gray of equivalent reflectivity, and this led some early researchers to think that insects were colour blind. Some butterflies perceive red as a colour, and in the Ottawa Valley, Swamp Milkweed is visited frequently by Monarch butterflies. The common garden poppy often has brilliant red flowers and these are favourite flowers for bees. However, poppy petals reflect ultraviolet light very strongly and it is this reflection, rather than the red colour, which the bees can perceive. Similarly, butterflies like thistle flowers but it is probably the purple which they see rather than the red.

Colour vision in insects was discovered by substituting coloured papers or pure spectral lights for flowers, and training insects to visit one of these colours while at the same time being offered a reward (sugar or nectar) there. The lights were then shifted or altered in various combinations until the nature and the limits of insect colour perception were ascertained.

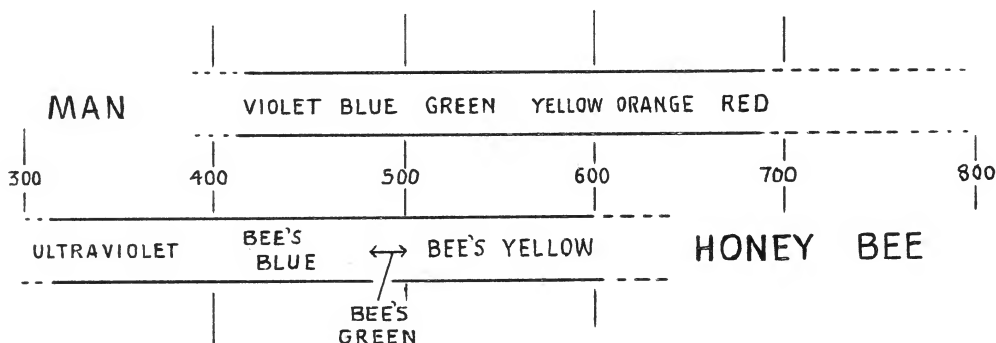


Fig. 1 Approximate extent of colour perception in Man and Honey Bee. Insect colour discrimination is a relatively new field of study and numerous problems remain unexplored. Numbers indicate wavelengths in nanometres.

Another question we can ask is: Is a particular insect attracted to the flower by colour or by scent? In some cases it is relatively easy to discover the answer. Thus if you observe that an insect approaches its "target" more or less in a straight line, it probably sees the flower. On the other hand, if the approach is gradual and zig-zaggy the attractant in the flower is probably an odour. You can conduct a simple experiment to determine this. In a field where pollinating insects are active, cover a conspicuous flower with a large test tube. Any insect which then tries to approach the flower through the open end of the test tube is responding to the "odour signal" rather than the light signal. Some insects (notably butterflies) can be attracted by both colour and smell so the observations must be made with caution.

A matter that has been controversial for a long time but that now seems well on its way toward solution is whether or not flower-visiting insects ever make use of "honey guides" in their approach to flowers. Honey guides are colourful streaks or spots on certain areas



of the corolla of many flowers. They are usually located near the source of nectar. Such guides occur in many plants. By putting bumble bees and other bees in cages and offering them various kinds of honey guides it has been found that the presence of honey guides does indeed make a flower (or a model) more desirable. Bees, for example, soon learn the significance of a certain kind of honey guide and thereafter they waste little time in finding the source of nectar. Honey guides therefore seem to greatly increase the efficiency of the honey-gathering process and serve to greatly increase the number of flowers effectively pollinated.

Another fact about flower-visiting insects is that they have a preference for broken patterns rather than simple roundish shapes. Hence many insects soon "memorize" a particular kind of flower and will readily pick it out repeatedly. However, flower patterns can be perceived only at relatively close range because of the nature of a bee's eye which can form only rather crude images at a distance. Therefore if the flower has a broken form (such as honey guides often create) it can more readily be recognized as the "correct species" by the insect. Thus the presence of a honey guide very often induces the insect to alight even though it is the general appearance of the flower from afar that serves as an attractant in the first place.

Many unsolved problems remain in this field. There have been reports that flies and some wasps (in addition to the known cases of some butterflies and fireflies) can, in fact, detect red as a colour. Experiments are needed to clarify this matter. Another problem centres around the apparent ability of night-flying moths to distinguish between colours in near-darkness and this again is an open field for research. Just why insects can perceive very short wavelengths of ultraviolet light (below 350 nm) is not known since such wavelengths do not exist anywhere at the surface of the earth for they are screened out by the earth's atmosphere. Also, our knowledge of tropical pollination systems is meagre indeed. Temperate and arctic floras had their origin in the tropics in ages past. Many of the flower-insect pollination patterns of temperate floras will become clearer as greater knowledge is acquired of pollination in the tropical rain forests of the world.

THE RIVER FRONT AT DESCHENES

Between the railway tracks and the Ottawa River, south of the lower road to Aylmer, lies an undeveloped area of land held by the NCC. It is the site of the northern approaches of the projected Deschenes to Britannia bridge and is at present readily accessible. There are several places where it can be reached across the tracks; the best approach by car is at a point just beyond the Rivermead Golf Club's entrance on the lower Aylmer Road. Where the paved road bends sharply away from the river a branch road swings off across the tracks. This leads to the village of Deschenes but any of the side roads on the left are dead ends providing parking spots a short distance from the river front.

The area is flat, swampy in places, trackless and rather stony. Coarse grass and scrub cover much of the area but there are some large elms and other trees. A few hundred yards east of the parking spots a beautiful little tributary of the Ottawa crosses the area; it is clear with a sandy bottom, and runs between banks which are covered with a tangle of sweet gale, sheep



River at Deschenes, with purple loosestrife

G.R. Hanes

laurel and other shrubs.

The shore area is stony with little bays and rocky promontories, well grown up with water-loving shrubs such as red osier dogwood and willow.

This Deschenes area is a place to visit in the late summer. We were there in late April this year and it looked rather forlorn. The growth was less advanced than in warmer, more favoured spots. A cold wind swept off the river, the grass had not grown enough to cover the inevitable garbage that appears in spots accessible by car, and the bird life was limited, though enlivened by the voices of song sparrows and robins. One reward was a front seat view of the court-ing display of a pair of blue jays in their beautiful fresh spring plumage. Another was the sound and sight overhead of a flock of Canada Geese.

In the summer, however, the area is bright with wild flowers and there is more bird life along the water front and in the trees and shrubs. The flowers include bottle gentian, cardinal flower, swamp candles, balsam apple and water plantain, and such gay introduced species as purple loosestrife, morning glory and creeping charlie. We get an interesting lesson in the survival of species, for there are several former home sites, where traces of the gardens remain. Tiger lilies, golden glow (*Rudbeckia*), sweet alyssum, pyrethrum and petunias still persist although it is several years since the area was cultivated.

On the waterfront, spotted and solitary sand-pipers pick their way among the rocks, and black duck and blue-winged teal take their broods out into the rapids where the ducklings, barely past the downy stage, buck the waves. Killdeer, kingfisher, black and common tern and bittern add interest along the shore. In the treed area, song sparrows and wood pewees are particularly plentiful.

The undeveloped nature of this area provides a contrast with the planned orderliness of the Ottawa River Parkway lands immediately across the river, and a visit there in late summer can give a rewarding hour or two of botanizing or bird watching.



Autumn Leaf Colours

Pieter Trip

For us who live in eastern Canada the summer may be short, but it expires in a blaze of glory, and all the trees put on fancy dress for the funeral. From the bright yellow of poplars and birches to the scarlet of hard maple and the crimson of sumac and virginia creeper, there is a wealth of colour which overwhelms the eye and intoxicates the mind.

Colour is not only a conspicuous feature, but some of the pigments responsible for colour are essential for the life of the plant. While it is possible to find in the plant kingdom all shades of the spectrum, there is a predominance of the primary colours green, yellow, red and blue, each caused by a separate class of pigments.

Let us consider what actually happens when we see colours. White light, consisting of wavelengths from 400-700 nanometres, falls on a pigment; the pigment absorbs some wavelengths more than others; and coloured light is reflected. Every pigment has its own absorption spectrum which may be represented as a curve on a graph showing the percentage absorption of light at each wavelength. Indeed, new chlorophylls are characterized by their absorption spectra well before their chemical structure is known. In the case of chlorophyll, absorption occurs in the red and blue, with very little in the green and yellow. The eye receives green with some white and yellow giving a general sensation of green. The yellow pigments, carotenoids, absorb

only in the purple and blue which are largely absorbed anyway by the chlorophylls. Consequently the carotenoids when present in leaves do not affect the colour in the presence of chlorophyll. In the autumn, however, the chlorophyll begins to break down before the carotenoids, and the latter become evident.

But the real magnificence of the fall colours depends on the reds. A new class of pigments enters the scene here for no reds are present in the typical summer leaf. These are the anthocyanins. They contain one or more benzene rings in their structure. The biochemical formation of benzene from sugar has been worked out in the last decade and it is now clear that the important aromatic (benzene-containing) compounds such as naphthalene, lignin, some of the vitamins, drugs (morphine, quinine) and most natural dyes are derived from sugar in plants. The world's vast organic chemical industry is based on materials obtained from coal tar, a product of plants now long dead. While the function of the chlorophylls and the carotenoids has been clearly linked with photosynthesis, the function of the anthocyanins has not been established. It is thought that in flowers, colour aids pollination.

Red colouring in leaves is considered to develop as follows: Cold nights in the fall promote formation of abscisin. This plant hormone is responsible for sealing off the petioles with a corky layer of cells eventually causing leaf abscission. The corky layer inhibits the export of sugar and later the import of water. Sugar builds up in the leaf and some is converted to anthocyanins. Simultaneously, lack of water and bright days cause protein and chlorophyll breakdown. As the season advances the colours fade to muddy browns and grays through disorganization of the pigments and other compounds, and the leaf gradually dies.



LETTERS

Happily, the mail
the edification of
carriers, and alth
they offer similar

Editor, T & L

I was pleased to see in a recent issue a note about birding along a stretch of the former New York Central right-of-way south of Ottawa. I also enjoy walking abandoned (and active) railway lines because they afford access to habitat types not always available by road.

I wonder if we have locally, in abandoned rail lines, a ready-made network of walking trails? For example, the former mainline CPR right-of-way west has recently been abandoned from east of Churchill Avenue through Britannia to just north of Bell's Corners. The rails and ties have been removed, creating several miles of walking trail. The section between Britannia Bay and Graham Bay is particularly attractive.

It is true that in Ottawa we are close to the network of trails of the Gatineau Park, but variety is important and a number of trails on the south side of the Ottawa River would be well used.

Walking for recreation and for wildlife observation is gaining more support each year. The Appalachian Trail has been famous for a long time; Ontario's Bruce Trail is already popular. In the United States, plans to establish a nationwide system of walking trails were proposed more than a year ago. Bills H.R. 4865 and S.827 now before the 90th Congress would set a policy on trail construction, designate the Appalachian, Continental Divide, Pacific Crest, and Potomac Heritage Trails as units of the system, and provide for studies and proposals for other possible trails.

While we may not yet be ready for such a move, I would like to suggest that development of local walking trails on abandoned railway right-of-ways or other sites would be a useful public service that the Ottawa Field-Naturalists might wish to initiate.

V. E. F. Solman
Ottawa

strike didn't prevent readers from offering views for
fellow readers! These letters arrived by different
though neither writer was aware of the other's message,
ideas. Has this thought occurred to others, too?

Editor, T & L

How about a walking trail around Ottawa?

Last spring, while attending the annual meeting of the Federation of Ontario Naturalists, Anne Banning and I were thoroughly charmed by a hike over part of the Ganaraska Hiking Trail which extends from Lindsay to Port Hope, a distance of 40 miles, and a beginning to what is hoped will be a much longer route to Midland. On that beautiful April day, this trail through rolling farmland, budding orchards, over streams and hills proved such an enjoyable experience, it convinced me that a venture such as this is just what Ottawa needs.

Excellent trails are available in the Gatineau Park thanks to the National Capital Commission, but for someone like myself without a car, a more accessible walking area approachable from different points of the city would be appreciated.

Our Capital is gradually becoming paved from wall to wall by concrete. To those of us disenchanted with our increasingly noisy and denuded cities, a walking trail might give us a chance to enjoy what remains of the rapidly depleting flora and fauna in some degree of peace and quiet. The naturalist's way of life just might be transmitted to others as well. We Canadians are constantly being reminded of the disgusting state of fitness we have managed to attain in 101 years and a refreshing hike might prove a painless means of remedying this situation.

I know a few Club members who are interested and am sure there are many others who would use such a trail if it were available. Anyone interested enough to look into such a project or to make comments or suggestions? If so, please call me, evenings, 232-8505.

Vi Humphreys
132 Powell Avenue
Ottawa 1



Let Them Live!

Barbara Froom, Editor
Canadian Amphibian and Reptile
Conservation Society

The Canadian Amphibian and Reptile Conservation Society was founded in the fall of 1960 by Alex Findlay, who decided it was time that these misunderstood creatures had some friends. The eminent Canadian herpetologist and writer, E.B.S. (Shelley) Logier, was the Society's first president.

This Society is affiliated with the Federation of Ontario Naturalists, and its primary purposes according to its constitution are (1) To promote the protection of amphibians and reptiles by any truthful and dignified means. (2) To inform the public of their nature and usefulness, and so help to dispel ignorance and prejudice and discourage their destruction. (3) To attempt to develop public interest in, and appreciation of, these valuable elements of our wildlife resources. (4) To attempt to promote a decent sense of democratic responsibility for the preservation, by those living today, of such natural objects for the enjoyment and benefit of future generations, which have rights equal with ours, but are not yet here to defend them.

To help achieve these aims, the Society has two pamphlets. "Let Them Live!" describes briefly some of the snakes found in Canada and emphasizes their economic importance. It stresses that rattlesnakes are the only native venomous snakes - the Pacific rattler found in the interior dry belt of southern British Columbia, the prairie rattler found in parts of Alberta and Saskatchewan, and Ontario's small massasauga found chiefly in the Georgian Bay area. The other Canadian provinces have no venomous snakes.

The second pamphlet, "The Care of Turtles", gives brief instructions on caring for these common, but often mistreated reptiles. Although they have been

sold as pets since about 1930, many people still do not realize that the little greenish, red-eared turtle when full grown should have a shell length of about ten inches, and at the end of one year, with proper care, may have attained a length of 3 or 4 inches. However, to thrive they require plenty of warmth (between 75 and 85 degrees F.), water deep enough for them to swim freely, an elevated area for sunbathing, and a varied daily diet of such foods as chopped, raw lean meat, raw fish, earthworms, snails, raw tomatoes, greens and aquatic weeds. Land turtles are chiefly vegetarians but should also be offered earthworms and raw meat.

Some reptiles and amphibians make fascinating pets, but the Society is extremely concerned about extinction of some exotic and difficult-to-keep species because of excessive collecting. Keeping some types in captivity could be just as bad as outright killing. Many small lizards eat nothing but insects which in most cases cannot be obtained in winter. Caymans (South American alligators) as well as some iguana lizards can grow to a length of six or more feet, at a rate of about a foot a year. Few people can accommodate them at that size or cope with their disposition - then what becomes of them? Recently boa constrictors seem to be very popular pets, but if they are exposed to temperatures lower than about 78 or 80 degrees for any length of time, they develop pneumonia and soon die.

The Society issues a bulletin to its members every second month except in July and August. This contains informative articles written for the most part by the members. There are now more than 100 members including doctors, teachers, museum curators, biologists and college students. They are in all parts of Canada, and there are many in the United States.

This organization also has an annual display of live specimens at the Canadian National Sportsmen's Show held in Toronto. Pamphlets and information are given to the public, who are usually very pleased to be able to see live specimens, especially a captive massasauga rattler. However, the rattler is now so used to this procedure that it refuses to "get rattled" about anything, and this is always somewhat of a surprise and disappointment to many people.

Field trips and regular meetings have not proved too successful for this type of society, chiefly because the members are widely scattered. Also, because of the need of much warmth for reptiles (amphibians tolerate cooler temperatures), July and August are about the only months we could be assured of seeing specimens in the field, and that is the time when many members are away and the college students working, often in distant areas.

In the early days of the Society, regular meetings were attempted, but with so many out-of-town members these were not always very well attended. Another problem here was that in addition to lectures, slides and movies, people wanted to see live specimens. This wasn't practical during cold weather, as understandably, members wouldn't risk exposure to their pets. We now find that a true conservation-minded approach is best; we encourage members to spread this message and organize, even in very small groups, to save specimens from areas being taken over by industry (usually on the outskirts of cities and towns) and transport them to wild areas of suitable habitat. In this day of so-called progress, this might be a worthwhile project for Boy Scouts or other interested groups. Reptiles and amphibians, unlike birds and some mammals, cannot quickly enough save themselves from this pathetic fate - the depletion and destruction of their habitat.

Readers of this publication interested in joining our Society could send the \$2.00 annual membership fee to the secretary-treasurer: Mr. Wayne Weller, 11 Marquis Ave., Toronto 18, Ontario.

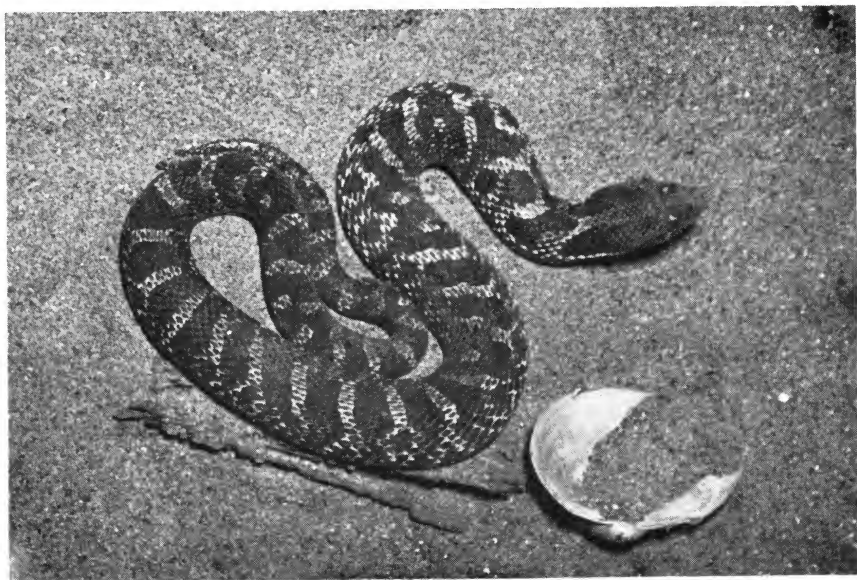
The motto of the Society is "Let Them Live". Even if you don't like snakes, could never develop an interest in them, or have no desire to join a reptile society, please try at least to remember this motto.

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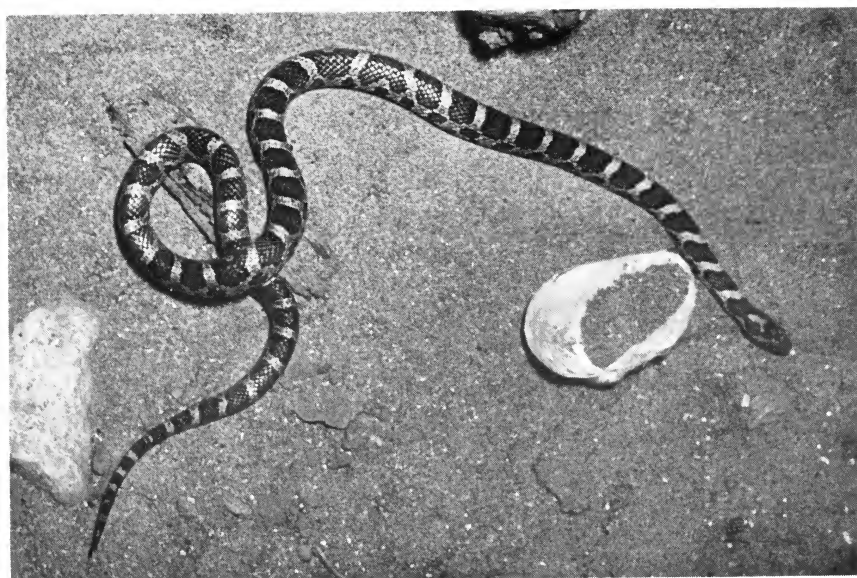
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Barbara Froom has made a record, CANADIAN RATTLESNAKES, for the Canadian Nature Series (Pentagon label SPL-301). Informatively written and charmingly narrated by Miss Froom, the record features the sounds of our three Canadian rattlers. Their photos decorate the record jacket.



Hog-nosed Snake



Milk Snake

Photos courtesy Ontario Department of Lands & Forest

An Orchid New To Gatineau Park:

AURICLED TWAYBLADE, Listera auriculata Wiegand

E. W. Greenwood

Last autumn, in the course of field work for the OFNC orchid survey, Hue MacKenzie stumbled across a small orchid in the woods near Fortune Lake in Gatineau Park. The plant had finished flowering but had nearly ripe fruit. Twayblades have such inconspicuous green flowers that the plant might have been missed had it been in flower. The fruits are pale yellow-green and become yellow when mature, and it was the fruit cluster which attracted attention.

Although obviously a Listera, the plant was certainly not Listera cordata, the heart-leaved twayblade, which while quite uncommon, is known from several locations in the Ottawa District, including one in Gatineau Park near Lac Philippe. This meant that it was a species new to the Ottawa District, since only Listera cordata was previously recorded.

There was no chance of identifying the plant before winter, so Mr. MacKenzie visited the site again in late June of this year. The plant was in flower, and seemed to be Listera auriculata, the auricled twayblade. A second visit with other members of the orchid survey produced agreement with the identification, and the discovery of a smaller specimen also in flower and one juvenile specimen, raising the count to three plants. An idea of how inconspicuous the plants are may be gathered by noting that the two additional plants were two feet from the first one found, but were not discovered on Mr. MacKenzie's first visit, nor on the second until the group had spent half an hour taking photographs of the first plant.

With only two flowering-size plants, it was not possible to collect a specimen for record without destroying all possibility of future seed production. One flower was preserved in alcohol and delivered to



Auricled Twayblade (*Listera auriculata*)

G. R. Hanes

the National Herbarium, and Gary Hanes made record photographs for deposit in the National Herbarium and the herbarium of the Department of Agriculture.

Since this orchid was previously known in eastern Canada only from the north shore of Lake Superior, the Clay Belt, and the Mingan Islands in the Gulf of St. Lawrence (to name the sites nearest to Ottawa), Mr. MacKenzie's report was received by botanists here with considerable skepticism. However, Dr. Erling Porsild and Dr. Jack Gillett were taken to view the plants, and both confirmed the identification.

The find marks an important increase in the known distribution of this rare species. It and another new location near Barry's Bay, Ontario, will be reported in a paper in The Canadian Field-Naturalist.

We are very pleased that the OFNC orchid survey has so soon produced new information of scientific interest.



I G



R E E S

Have your summer rambles turned up any contenders for the Big Tree contest? If so, report your finds to Harry Thomson (234-0845) or Gary Hanes (749-2400). Don't let that "bigness formula" scare you. There's no need to scale the tree and measure it - we'll look after that part. But it is helpful to know the tree's circumference before we make a trip to measure it.

Many species are still completely unrepresented in our lists: white birch, tamarack and hemlock, the ashes and the spruces, to name a few. Twenty species have been measured and reported in T & L so far. The Ottawa area has more than fifty kinds of trees.

If you can't tell us exactly what kind your big tree is, don't fret. The problem will be referred to the Botanical Identification Section of the Big Tree Committee!

To qualify as a Champion Tree, your specimen need not be huge. Many species never attain great size, and if your modest Dogwood or Juneberry is just the biggest Dogwood or Juneberry nominated, you'll have a winner!

Speaking of Big Trees, perhaps this item, sent in by Dr. Dore, will set someone off upon the trail of a champion.....

TWO OLD JACK PINES: Where Are They Now?

The Jack Pine (*Pinus banksiana*) is lacking naturally from most of Ontario and Quebec, south of the great Boreal Forest.

Consequently, the following extract from Macoun's Catalogue of 1886 may be of interest to local naturalists:

"Two trees only have been observed near Ottawa, one found on King's Mountain, Chelsea, P.Q., by Mrs. J. G. Bourinot, and one near the Mer Bleue at Eastman's Springs. (Fletcher)"

Can anybody report more precisely on the location of these old trees, on their present well-being or fate?

W. G. Dore
60 Carlyle Avenue
Ottawa 1

GENERAL GEOLOGY OF THE OTTAWA AREA

Humphrey Childe

The study of rocks and minerals can add very much to our enjoyment of the great outdoors. In the Ottawa area, rocks and minerals are abundant and there are many interesting geological sites that are easily accessible.

The rocks in the Ottawa Area can be placed in three distinct age groups: Precambrian (over 500 million years old), Ordovician (350-450 million years), and Pleistocene (about one million years).

The Precambrian rocks of Canada form what is known as the Canadian Shield or the Precambrian Shield. The Gatineau Hills are really the remains of eroded mountains of the Canadian Shield.

The earliest Precambrian rocks of our area were either sedimentary (formed from material laid down in water, such as limestones, shales, and sandstones), or igneous (solidified from the molten state, such as granite and syenite). However, many of these rocks have since been altered by great heat and pressure. Being changed from their original form, they are now classed as metamorphic rocks. In many, the minerals may show banding or preferred orientation. Such rocks, if coarse-grained, are known as gneisses; if there is a foliated structure of fine-grained platy materials they are called schists. The limestones of our Precambrian rocks have been altered to what is generally known as marble. The shales have been metamorphosed to gneisses or schists; and the sandstones to quartzites. Good exposures of Precambrian rocks are to be seen in the roadcuts of the Gatineau Parkway and in many areas up the Gatineau and Lievre highways.

In the Ordovician Period, the sea advanced over the region, and sediments were deposited. The first sediments formed the basal Nepean sandstone. These were followed by interlayered sandstones, shales, and limestones. Because of the abundance of marine life in the Ordovician Period, there are many fossils in the limestones - brachiopods, cephalopods, crinoids, blastoids and others. Ordovician rocks are exposed in a number of places along the shores of the Ottawa River

in Rockcliffe area and along Sussex St. Many fossils are present. There is a limestone quarry along the Montreal Road about $1\frac{1}{2}$ miles east of St. Laurent Blvd. Ordovician rocks can also be seen on the Aylmer Road and Trans-Canada Highway both east and west of Ottawa.

Little is known about what took place geologically during the long period following the Ordovician, until the Pleistocene, or Ice Age. Before the Pleistocene, the topography probably had greater relief - higher hills and lower valleys. During the Ice Age, the mountains were eroded and the valleys became filled with glacial sediment (or glacial till).

Many depressions resulted from glacial erosion of the softer rocks, leaving land surfaces uneven. Due to poor drainage, these depressions became filled with rain and groundwater, forming lakes and swampy areas in much of Ontario, Quebec and our North. Philippe, Harrington, and Meach Lakes are known as "finger lakes" due to their shape. Before the Ice Age this was probably a river bed; but uneven deposition and erosion affected the drainage, damming up some of the water to form these finger lakes.

One result of the Ice Age was the transporting to other areas of much of our mineral resources, especially secondary minerals (minerals which have been altered or oxidized). Another disservice is that most of our topsoil has been eroded and transported into the United States, leaving the bedrock with many lakes and swamps. Had it not been for the Ice Age, much more of our land would be more arable, as there would be more topsoil and better drainage.

In preparation of this article, the author has made use of the following publications which are recommended for study of the geology of the region:

Hogarth, Donald D., A Guide to the Geology of the Gatineau-Lievre District. Can. Field-Naturalist, Vol. 76, No. 1; 1962. Available from the National Museum, or the Geological Survey of Canada.

Wilson, Alice E., Geology of the Ottawa-St. Lawrence Lowland, Ontario and Quebec. Geol. Surv. Memoir 241.

Wilson, Alice E., A Guide to the Geology of the Ottawa District. Can. Field-Naturalist Vol. 70, No. 1. 1956.

AN EDITOR COMMENTS.....

on our first Guest Editorial, in the May-June issue

It is always enlightening, if humbling, to see ourselves as others see us. In this respect, we are grateful to Dr. Timothy Myres for taking the time to appraise our efforts as a natural history club. We find his comments frank, pertinent and constructive. Especially do we commend his remarks on the place of youth in our organization. We suspect that the scarcity of scientific contributions by amateurs in the Club is not entirely unrelated to the scarcity of youth in our ranks.

In discussing the content of T & L, though, Dr. Myres has overlooked what we thought was obvious. T & L was never intended as a junior edition of The Canadian Field-Naturalist, which is the scientific journal of the Club. While T & L is "concerned with natural history" this might be spelled out more specifically as: concerned with promoting the enjoyment of natural history. For some, enjoyment means study, and we believe we have included something for their encouragement in every issue. But T & L is equally concerned with encouraging more and more people to enjoy and appreciate natural history, whether or not they have any desire to engage in biological studies. Many amateurs with little or no background in biology merely want to go out and learn the songs of birds, or enjoy the beauty of wildflowers. While this does little to benefit biologists, it does contribute to the enrichment of the lives of city-bound people. This is not a lesser contribution to society, but rather a contribution in a field other than scientific. The human beings who will reap benefits from these naturalists are the coming generations, since it is the attitude of the public of today that will determine the ingredients of the landscape we leave to people of the future.

Sheila Thomson

O F N C COMING EVENTS

arranged by the Excursions and Lectures Committee;
E. W. Greenwood, Chairman

Saturday 14 Sept. BIRDS, PLANTS, ROCKS

Mary Stuart's property, Indian Creek, Pakenham

Meet: Health & Welfare Bldg.
Time: 8:00 a.m.
Leaders: Mary Stuart, Bill Holland

Bring lunch. A six-mile walk is involved, possibly
through wet places in part.

Sunday 15 Sept. BIRDS IN FALL MIGRATION

" 22 "

" 29 "

" 6 Oct.

" 13 "

Shirley's Bay

Meet: Restaurant, Shirley's Bay
Time: 8:00 a.m. each Sunday
Leaders: various

Half-day sessions

Saturday 26 Oct. BARKS, BUDS, NUTS, ROOTS AND BONES

Meet: R.A. Parking Lot, Riverside Dr.
Time: 1:30 p.m.
Leader: Dr. Bill Dore

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